

ArcGIS Server

**This is Your Brain.
This is Your Brain on the Flex API
with Cached Map Services.**

Andy Wright

Senior GIS Application Developer, SRP

Objectives



- **API Epiphany**
- **R.I.P. Web ADF**
- **Map Caching Epiphany**
- **Heavyweights: Flex vs. Silverlight**
- **Getting Started with Flex**
- **Flex Issues**
- **Mashing Up**
- **Innovations**
- **Application Demo**
- **Future**
- **Lessons Learned**
- **Questions**

Who's in the Audience???



- Looking to upgrade ADF app to API app?
- Not sure how to get started with these new APIs?
- Flex programmers?
- Silverlight programmers?
- Packer fans?

- **GITA Seminar (February, 2009)**
 - MXDPERFSTAT presentation
 - City of Phoenix - Flex application (Gady Pitaru, Rob Walsh)
- **City of Phoenix presentation blew me away**
 - App look and feel
 - Great performance
 - Short development time
- **We thought we needed ArcObjects/dynamic map services**
- **How do we get from here to there???**

- **It's very hard to code in the Web ADF**
 - ArcObjects
 - ASP.NET
 - HTML
 - Javascript
 - Callbacks
 - AJAX
- **Slow response times**
- **Not able to easily mashup with other data sources**
- **Spend an inordinate amount of time tweaking MXDs for performance improvements**
- **Spent huge sums of money on hardware and ArcGIS Server licenses**

Map Caching Epiphany



- **No way we can cache our data**

- Very dynamic, updated nightly
- Large service area = days to generate caches

- **2009 ESRI Developer's Summit – Advanced Map Caching Topics**

- <http://resources.esri.com>
- ArcGIS Server/Online SDKs/Flex/Community/Media Gallery
- DS2009: Advanced Map Caching Topics video

Map Caching Epiphany (cnt'd)



■ How are we doing it?

- Only cache small area, let rest cache on demand
- PNG8 – small file size, transparency, quick draw times
- Use ESRI's ArcGIS online cache scales, tiling scheme, and projection (WGS84)
 - <http://blogs.esri.com/Dev/blogs/arcgisserver/archive/2007/8/7/368.aspx>
 - We add four more large scales
- Proper MXD setup can make life easier
- Heading towards Bing Maps tiling scheme and Web Mercator projection

Map Caching Epiphany (cnt'd)



■ Challenges

- 6 caches ~ 30 hours generation time per cache
- Each cache gets updated once a week
- Dynamic map services provide instant access to new data

■ Partial map caching is what we really need

- Nightly Smallworld → SDE process is spatially intelligent
 - Utilize Oracle Spatial to determine areas where data was updated
- ArcGIS Server 9.3.1 cache tools can cache by area
 - Create Map Server Cache
 - Manage Map Server Cache Tiles
- DOTNET/ArcObjects program does partial caching for us

Map Caching Epiphany (cnt'd)



■ Advantages

- Much faster draw times
- Cartographically robust
- Need fewer map service instances to support a cached map service

■ Disadvantages

- Snapshot of the data at a point in time
- Inability to turn individual layers on and off
- Can only zoom to pre-defined map scales
- Overstamping of labels between caches
- Tons of automated caching processes to keep track of
- Must move cached images from cache server to production servers
 - 9.4 has compressed cache that should help with that
- A change in map symbology requires full cache regeneration
 - Will probably be doing quarterly full cache rebuilds

Heavyweights: Flex vs. Silverlight



■ Silverlight was our first choice

- DOTNET based
- No sample viewer, a lot of UI design effort
- PNG8 transparency issue
 - <http://forums.esri.com/Thread.asp?c=158&f=2455&t=278772&mc=26#msgid862525>
- Buggy beta-version development

■ What about Flex?

- ESRI Sample Flex Viewer gave us a huge head start
 - Over 14,000 downloads
- Mature technology, huge developer community
- Not too big of a learning curve - ActionScript similar to C#, JavaScript
- Flex Builder 3 - \$250

Getting Started with Flex



■ Things you need to get started:

- Download 60-day trial version of Adobe Flex Builder 3
 - <http://www.adobe.com/cfusion/entitlement/index.cfm?e=flexbuilder3>
- Download ESRI's Flex API version 1.2
 - <http://resources.esri.com/arcgisserver/apis/flex/>
- Download Adobe Flash Player 10 Debugger version
 - <http://www.adobe.com/support/flashplayer/downloads.html>
- Download Sample Viewer from ESRI Resource Center
 - <http://resources.esri.com/arcgisserver/apis/flex/index.cfm?fa=codeGalleryDetails&scriptID=15905>

Getting Started with Flex (cnt'd)



■ Things you need to learn:

- MXML and ActionScript
 - <http://www.adobe.com/devnet/flex/videotraining/>
 - <http://www.adobe.com/devnet/flex/>
 - <http://examples.adobe.com/flex3/componentexplorer/explorer.html>
- How to develop within the ESRI Sample Viewer
 - FlexViewerDevelopersGuide.pdf
 - Look through and tinker with the code
- How to access web services through Flex
 - http://www.adobe.com/devnet/flex/articles/flex_ws.html
 - http://livedocs.adobe.com/flex/3/html/help.html?content=data_access_1.html

■ ESRI Resource Center is a great learning resource

- <http://resources.esri.com/arcgisserver/apis/flex>
- Forums, Blog, Code Gallery, Samples, Documentation, e.t.c.

- **Need to jump through a few hoops to access DOTNET web services**
- **Printing**
- **Windows Authentication**
 - <http://forums.esri.com/Thread.asp?c=158&f=2421&t=285428&mc=16#msgid886182>
- **“I know how to do this in DOTNET” moments**

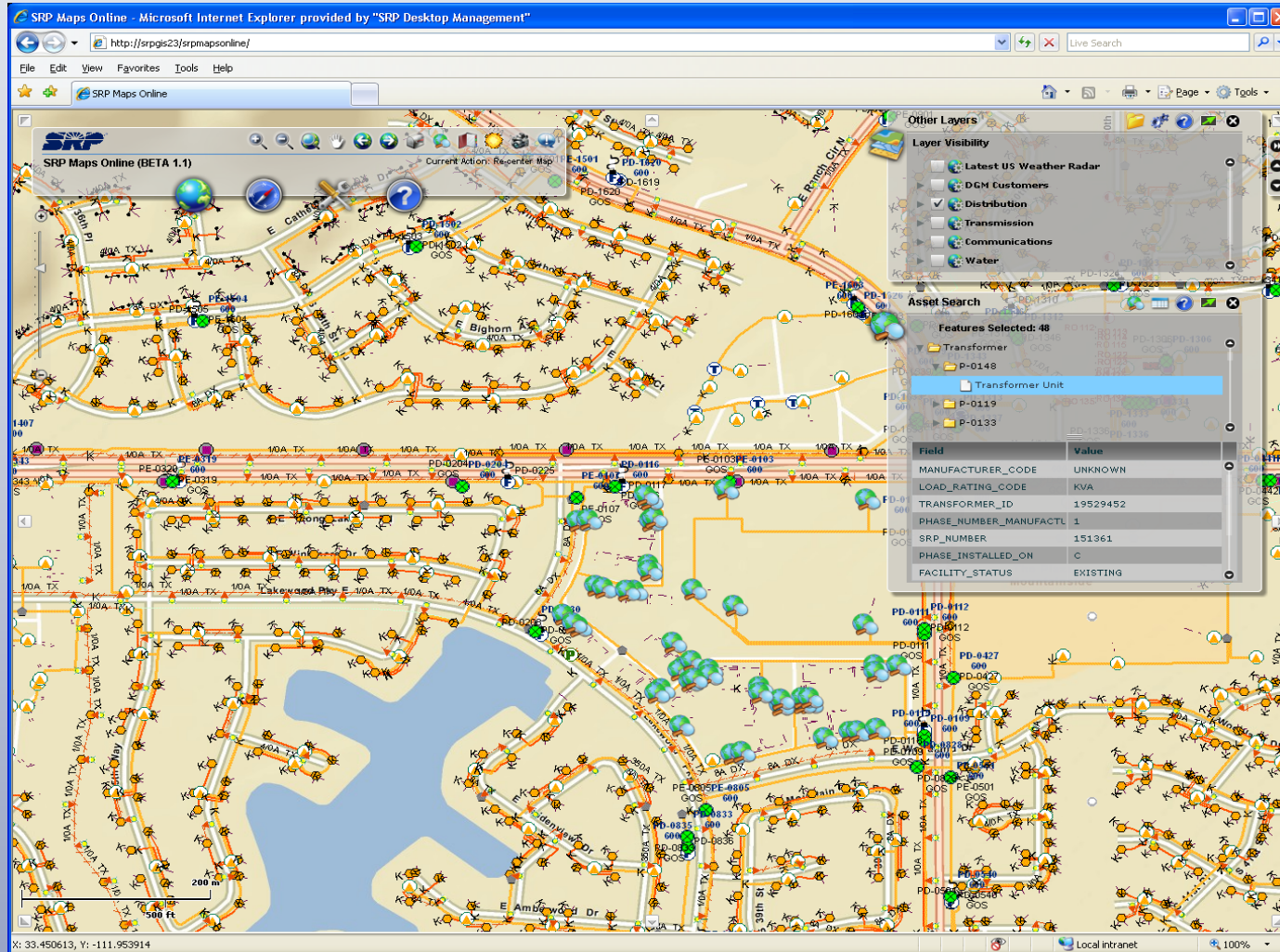
Mashing Up



- **SRP cached/dynamic services**
- **ESRI ArcGIS Online services**
 - <http://resources.esri.com/arcgisonlineservices/index.cfm?fa=content>
- **WMS weather service**
- **REST based AZ imagery services???**
 - ASU
 - Flood Control District

- **Partial map caches**
- **Map service based security**
 - http://webhelp.esri.com/arcgisserver/9.3.1/dotNet/index.htm#walkthrough_windows.htm
- **Widget based security**
 - Host Flex app in ASPX page
- **Distributed Generation Mapping Widget**
 - Allows for creation and editing of SDE point data
 - Oracle Spatial
 - Integration with SQL Reporting
- **Revamped Identify widget – ArcMap-esque**
- **Identify and search widgets can deal with relationship classes**
- **Asset search widget is web service driven search tool**
 - Populate asset search list and dynamically create search UI

Application Demo



Where is SRP Heading???



- **Plan to use SRPMO as a one stop shop for all clients**

- Flex-ify old map viewers
- Secured map services and widgets (DGM)
- One size fits all

- **Integrate BING maps data**

- **Silverlight**

- Silverlight 3 came out recently – PNG8 issue not fixed
- Keep most of business logic in web tier (web services)
 - Write new Silverlight UI to access same business logic
- Silverlight Sample Viewer?
 - Silverlight Showcase Application

- **Wherever ESRI is ...**

Lessons Learned



- **Never listen to a guy that tells you to tweak MXDs to get better performance in your web apps – CACHE AWAY!!!**
- **Where there's a will there's a way**
 - Map caching/partial map caching
 - API development
- **Relatively speaking, the APIs are fairly easy to get up and running with**
 - Minimal amount of training will get you going
 - ESRI provides a great kick start
 - They are free!!!
- **USE THE ESRI RESOURCE CENTER!!!**
 - New stuff added all the time
 - Great user community
 - Tons of samples, downloadable code, widgets

In Summary



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Questions & Contact Information



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- Contact Information
 - aiwright@srpnet.com

